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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/581,620

03/26/2007

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EXAMINER

BRASE, SANDRA L

ART UNIT

PAPER NUMBER

2852

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DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/581,620	<b>Applicant(s)</b> HATANO ET AL.	
	<b>Examiner</b> Sandra L. Brase	<b>Art Unit</b> 2852	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-13 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 June 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. ____.                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>See Continuation Sheet</u> .                                  | 6) <input type="checkbox"/> Other: ____.                          |

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :3/26/07, 4/16/07, 11/14/07 & 3/14/08.

## **DETAILED ACTION**

### ***Drawings***

1. Figure s 7 and 8 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled “Replacement Sheet” in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character “1” has been used to designate a high-voltage power supply unit (figure 1), a photoconductor (figure 4), an image forming apparatus (figure 7) and commercial power (figure 8); reference character “2” has been used to designate a cpu (figures 1, 6 and 7), a recording paper (figure 4) and a rectification circuit (figure 8); reference character “3” has been used to designate a high voltage transformer (figures 1, 6 and 7), a power supply (figure 4), and a primary coil (figure 8); reference character “4” has been used to designate a transformer driving circuit (figures 1, 6 and 7), and a light source (figure 4); reference character “5” has been used to designate a resistor (figures 1, 6 and 7), a toner (figure 4) and a secondary coil (figure 8); reference character “6” has been used to designate a transistor (figures 1, 6 and 7), a power

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supply (figure 4), and a neon tube (figure 8); reference character "7" has been used to designate a capacitor (figures 1, 6 and 7), and a power supply (figure 4); reference character "8" has been used to designate a constant voltage control circuit (figures 1, 6 and 7) and a power supply (figure 4); reference character "9" has been used to designate a diode (figures 1, 6 and 7) and a heat source (figure 4); reference character "10" has been used to designate a diode (figures 1, 6 and 7) and a cleaning blade (figure 4); reference character "26" has been used to designate a load current detecting circuit (figure 1) and an amplifier (figure 7); and reference character "27" has been used to designate a common bus (figure 1) and a resistor (figure 7). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-4 and 6-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (US 5,621,630) in view of Kanbara et al. (JP 07-177740).

6. Suzuki et al. (...630) disclose a high-voltage power supply that includes at least a high-voltage transformer and a driving circuit for driving the high-voltage transformer and supplies power to a load connected to a secondary side of the high-voltage transformer, further comprising: a high-voltage switching circuit for switching polarity of a DC output voltage generated on the secondary side of the high-voltage transformer; and a control circuit for controlling switching by the high-voltage switching circuit based on a load current that is caused to flow by application of the DC current output voltage (col. 8, line 3 – col. 14, line 58; and figures 1, 4-12, 23 and 24). A plurality of pairs of the high-voltage switching circuit and the control circuit are connected in parallel on the secondary side of the high-voltage transformer (figures 1, 4-12, 23 and 24). The load is an image forming apparatus and wherein the high-voltage power supply is used in a transfer process for moving a toner image formed on a surface of the photoconductor to recording paper (col. 2, line 61 – col. 3, line 4; col. 8, line 3-10; and col. 14, lines 53-58). The DC output voltage generated on the secondary side of the high-voltage

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transformer is converted into an AC output having a rectangular waveform (figure 15).

However, Suzuki et al. (...630) do not disclose the claimed PWM control and the high-voltage switching circuit having a full-bridge structure. Kanbara et al. (...740) disclose performing PWM control for a high-voltage switching circuit for converting a DC output to an AC output ([0009], [0010] and [0013]). The high-voltage switching circuit has a full-bridge structure (7) using a wide-band gap semiconductor device as a switching device. It would have been obvious to one of ordinary skill in the art at the time of the invention to have the claimed PWM control since such a control for converting a DC output voltage to an AC output voltage is well known in the art and would have predictable results; and it would have also been obvious to one of ordinary skill in the art at the time of the invention to have the claimed full-bridge structure, as disclosed by Kanbara et al. (...740), since such a switching circuit is well known in the art and would have predictable results.

7. Claims 5 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (US 5,621,630) in view of Kanbara et al. (JP 07-177740) as applied to claim 4 above, and further in view of Papanicolaou (US 5,270,252).

8. Suzuki et al. (...630) in view of Kanbara et al. (...740) disclose the features mentioned previously, but do not disclose that the semiconductor device comprises SiC as a base material. Papanicolaou (...252) discloses a semiconductor device comprising a SiC as a base material (col. 1, lines 16-20). It would have been obvious to one of ordinary skill in the art at the time of the invention to have the semiconductor device comprise SiC as a base material, as disclosed by

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Papanicolaou (...252), since SiC is well known in the art to have a wide band gap, has excellent electrical characteristics and has superior thermal properties.

### ***Inquiry***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sandra L. Brase whose telephone number is (571) 272-2131.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Gray, can be reached on (571) 272-2119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Sandra L. Brase/

Primary Examiner, Art Unit 2852

March 13, 2009